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COMMERCIAL FISHING VESSEL SCIENTIFIC OBSERVER MANUAL, WITH SPECIAL EMPHASIS ON LOBSTER TRAPPING

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PREFACE

The Honolulu Laboratory occasionally has the task of examining the operations of commercial fishing boats or of utilizing such vessels as platforms for noncontract research. This manual addresses some of the elementary prerequisites for effective scientific observation on a commercial fishing vessel.

The author is an experienced seagoing biological technician. The manual represents his advice and concern for the at-sea observation. At the same time, the manual reflects the general procedures for field observations as currently practiced at the Honolulu Laboratory.

The manual is based on the author's experience as an observer on lengthy commercial fishing trips. The sampling protocol reflects that assignment, but it is the responsibility of the Program Leader to prepare the specific sampling protocol for each fishing trips.

Scientific observation on a commercial fishing boat is often arduous and the working conditions are frequently less than comfortable, but the information is invaluable. The purpose of this manual is to assist the technician who faces this difficult task.

INTRODUCTION

This observer manual is designed to aid seagoing scientific personnel by providing information on standardized sampling procedures followed at the Southwest Fisheries Center Honolulu Laboratory. Great care should be taken when recording data to be sure that the information is accurate (double checking is suggested) and complete. Analysis often takes place months after data collection, so one should not rely upon memory; observations should be recorded.

Standardized data sheets have been designed to assure the collection of complete data. Always fill the forms out as completely as possible. If anything notable occurs during an operation for which no space is provided on the data sheet (e.g., gear loss or malfunction, or unusual observations), it should be recorded in the margin or in the remarks section of the data sheet.

Scientific instruments and gear must be kept in optimal working condition to assure good data collection. Care should be exercised when handling instruments and gear, and preventive maintenance should be undertaken whenever necessary to ensure optimal performance.

The observer should remember that he is there only to observe and not to enforce any laws. If violations are suspected, they should be documented in the scientist's log.

OBJECTIVES

The Honolulu Laboratory survey work has been directed toward identification and assessment of fishery resources within the U.S. Fishery Conservation Zone in the central and western Pacific Ocean (the 200-mile zone). Our work is largely concentrated on the offshore, deepwater areas (beginning at about 36 m (20 fathoms)).

Data from our cruises will be made available to local government and industry to aid in developing and managing local fisheries. They will also be made available to the Western Pacific Regional Fishery Management Council to assist in their development of management plans as mandated by the Magnuson Fishery Conservation and Management Act. The data may be released only in summarized form and must include data from three or more vessels, the names of the vessels will remain anonymous. If fewer than three vessel's data are collected, then data will be specified as CONFIDENTIAL and may be released only with the owner's and captain's written permission.

RESPONSIBILITIES OF OBSERVER

Cruise Preparation

The Program Leader is responsible for arranging passage on the vessel for the observer, for negotiating the scope of the observer's activities on

board (including possible compensation to the ship for accommodations and food), and for developing the field sampling program.

The observer is responsible for understanding these arrangements before departure, for clarifying uncertainties, and for being fully knowledegable about the sampling protocol. On board it is the responsibility of the observer to discuss the method of sampling with the captain of the vessel. The observer should minimize interference with the fishing operations and should be available to help out if required. However the observer is not a paid member of the crew. The observer's primary and overall responsibility is to collect data, and this should be fully discussed with the captain before departure and should be a condition of placing an observer on board.

The observer is responsible for his own work schedule and for keeping track of time worked. The number of hours worked by the observer will be worked out with the Program Leader before the cruise.

Cruise Report

A cruise report will be prepared by the observer. The report should stress factual accomplishments of cruise objectives as well as mention observations of general interest.

The draft cruise report must be submitted to the Program Leader no later than 2 weeks after the end of the cruise. It will include the following information:

Vessel and cruise number
Cruise period
Area of operation
Itinerary
Mission and results
Observations

General Scientific Procedures

A. Scientist's log

The observer shall keep a detailed Scientist's Log during the cruise. The Scientist's Log should be a journal describing the events of the day in detail. It should be written in nonsmear ink or pencil, be clearly legible, and complete in all descriptions and explanations. At the end of the cruise, it becomes a part of the archives of the Honolulu Laboratory.

B. Date and time designations

The date of an observation or collection, if expressed in numerals, is symbolized by Arabic numerals, separated by slashes or hyphens, in the order: month, day, year unless

indicated otherwise by the standardized form (e.g., 03-16-86 or March 16, 1986).

The 24-hour clock, as in standard naval usage, is used in recording time. For example, 8:00 a.m. is written 0800 and 3:00 p.m. becomes 1500. Local time will be recorded.

Field Collection of Biological Specimens

A. Receive permission before removing specimens from the catch.

B. Prearrange with captain and cook for freezer space for specimens.

C. What to save:

1. Save specimens of all unidentified and/or undescribed species.

2. Save any rare or interesting specimen of any species particularly if there is reason to believe that it is not present in the Laboratory's reference collection.

3. When in doubt, save it. Most specimens do not take up that much space.

Things to Remember Aboard a Commercial Boat

A. Safety is of primary concern.

B. Your bunk and locker are your only private territory; all other areas must be shared equally with your shipmates.

C. You are required to carry a pictured identification, copy of cruise plan, and travel orders.

D. Be careful of freshwater usage. Some boats have water makers; others carry the water to be used for the entire trip.

E. Take care of your health. Cuts and scratches should be taken care of immediately.

F. See a dentist or doctor before you leave; obtain any personal medication you may need.

G. If you like any particular food, bring it yourself. Don't expect it to be provided (candy, dried fruit, etc.) by the vessel.

H. Avoid gambling with crew, **play for fun.**

I. Don't get involved in personnel conflicts if possible. Use common sense!

J. You may be at sea for many weeks--plan accordingly. Although the expected trip duration will be discussed between the cruise leader and the vessel captain, you may be out longer than expected.

K. The Captain is the master of the ship, what he says goes.

Clothing and Other Essentials

Even in the subtropical latitudes, life aboard a commercial fishing vessel is anything but a pleasure cruise. Comfort and protection from the elements are important concerns. This list of suggested clothing is only an example. Use good judgment based on the itinerary and objectives of the cruise. A partial list might include:

Books and magazines
Boots (rubber)
First-aid kit
Foul weather gear
Long pants
Personal items
Shoes (sneakers)
Shorts
Slippers
Socks
Sunglasses
Sunscreen
Sun visor
T-shirts
Toothbrush
Towels
Underwear
Warm clothing
Washcloth
Walkman and tapes

Also check with the Captain to find out what type of bedding you will need (sheets, pillow etc.). The amount and type of clothing to be brought is the responsibility of the observer.

What to Do in Case of Emergency

A. Know where lifesaving devices are stored.

B. Know where first-aid kit is stored.

C. Know how to call U.S. Coast Guard.

D. Familarize yourself with radio operations.

E. Know where you are (position).

Sampling Procedure

A. Sampling routine.

Sampling routine will vary depending on the mission of each cruise. Observers and Program Leaders will be responsible to make sure they understand data collection and recording procedures.

A typical routine would be a systematic sampling from a vessel's catch. This involves:

1. Working closely with the crew.

2. Measuring and recording in a confined work area.

B. Data collection.

The preparation of data collection sheets for recording information aboard commercial vessels is the responsibility of the Program Leader. Examples of the data sheets for lobster counts and morphometrics from a recent lobster cruise are given in the Appendix.

Work Schedule and Overtime

Daily fishing operations on commercial vessels may entail long hours but observation must be limited to reasonable time durations for the health of the observer and budgetary reasons. The Program Leader is responsible, **before departure,** for determining how much overtime will be paid the observer.

There are two provisions under the law for determining overtime entitlements: Title 5 U.S. Code and the Fair Labor Standards Act (FLSA). These laws are designed to protect the employee and are applicable to the observer. A brief summary is included in the appendix.

As a general rule, the time worked on a commercial vessel is limited to the time necessary to undertake the sampling. Generally this will be limited to 12 hours per day. On vessels where irregular overtime are excessive and consistently exceed 44 hours per week, or if the duty hours for one day exceeds 12 hours consistently, the employee shall submit a detailed written justification to the Laboratory Director, providing information about the vessel's work schedule, fishing operations, and data collected by the employee. Such cases will be reviewed on an individual basis and approved only if the justification is sufficiently strong to warrant the excessive overtime.

APPENDIX

Lobster Morphometric Information

A. General information.

Recorded information should consist of species, carapace length (CL), tail width (TW), sex, and state of maturation.

1. Species:

   a. Spiny lobster: Panulirus marginatus (Fig. 1)
      P. penicillatus.

   b. Slipper lobster: Scyllarides squammosus (Fig. 2)
      S. haanii (Fig. 3).

2. Distinguishing characteristics:

   a. Spiny lobster (Fig. 4).

      Panulirus marginatus or red lobster is easily distinguished from P. penicillatus or green lobster, the second species of commercial importance in Hawaii; P. penicillatus has two pairs of strong anterior spines on the antennal plate (Tinker 1965); whereas P. marginatus has one pair of strong anterior spines on the antennal plate. Panulirus penicillatus is mainly a shallow water species that occurs less than 1% of the time in commercial catches Northwestern Hawaiian Islands (NWHI). Color in P. marginatus varies but is usually purplish marbled with white. Color may be light yellow, light brown, or dark brown; brownish specimens are usually tinged with red (McGinnis 1972).

   b. Slipper lobster

      Scyllarides squammosus and S. haanii are morphologically similiar and can be confused easily. The most obvious difference between the species is that the dorsal midline of abdominal segments 3 and 4 is strongly elevated or humped in S. haanii but is only a weak ridge in S. squammosus (Morin and MacDonald 1984) (Fig. 5). Scyllarides squammosus is referred to by the fisherman as slipper or flipper lobster and S. haanii is called the ridgeback, humpback, or bulldozer.

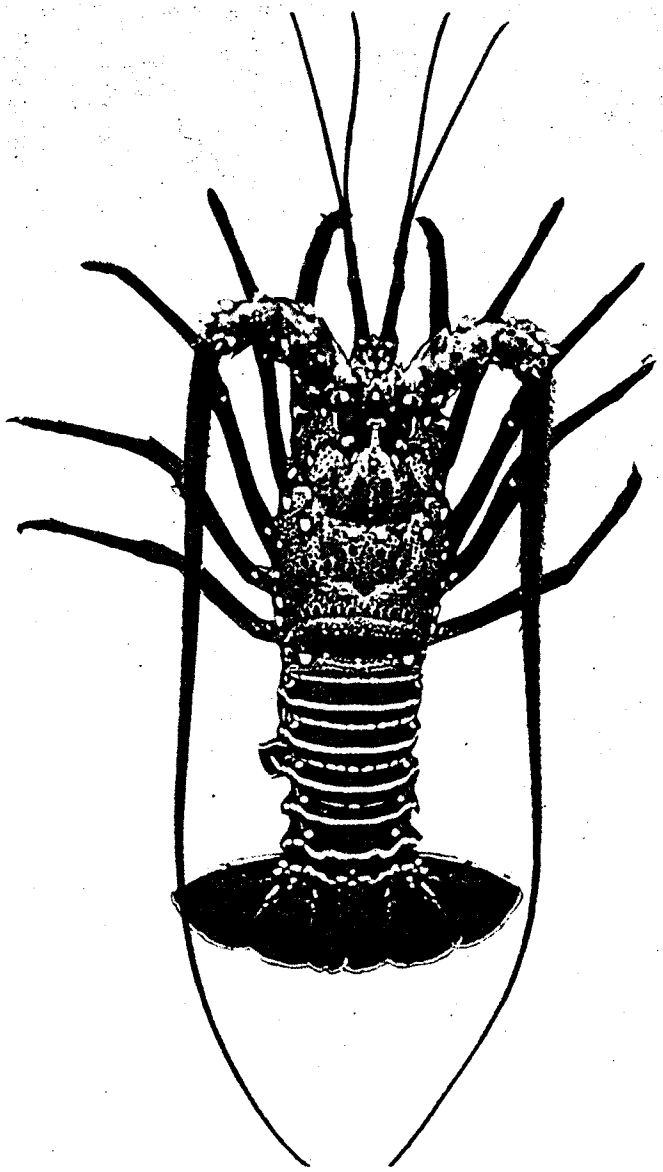


Figure 1.--*Panulirus marginatus*.

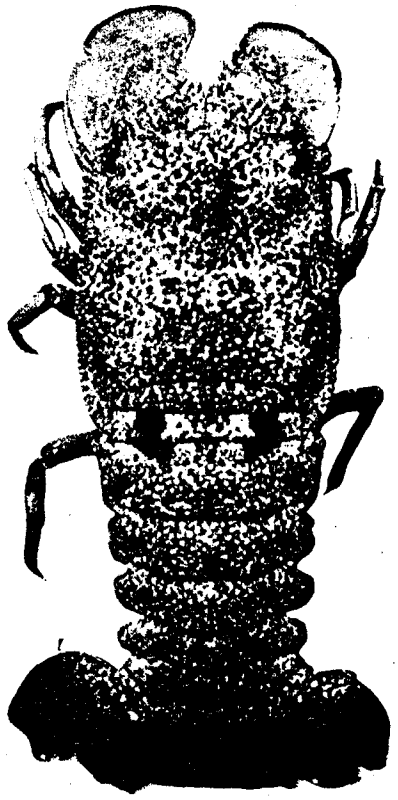


Figure 2.--Scyllarides squammosus.

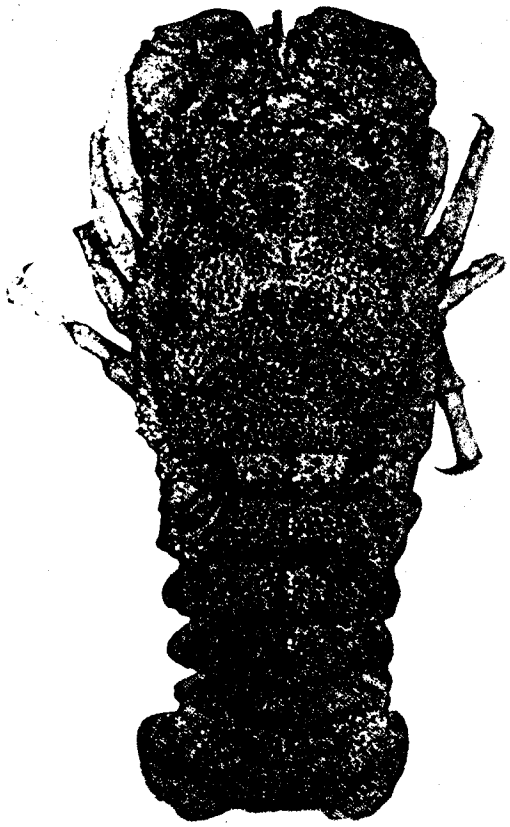
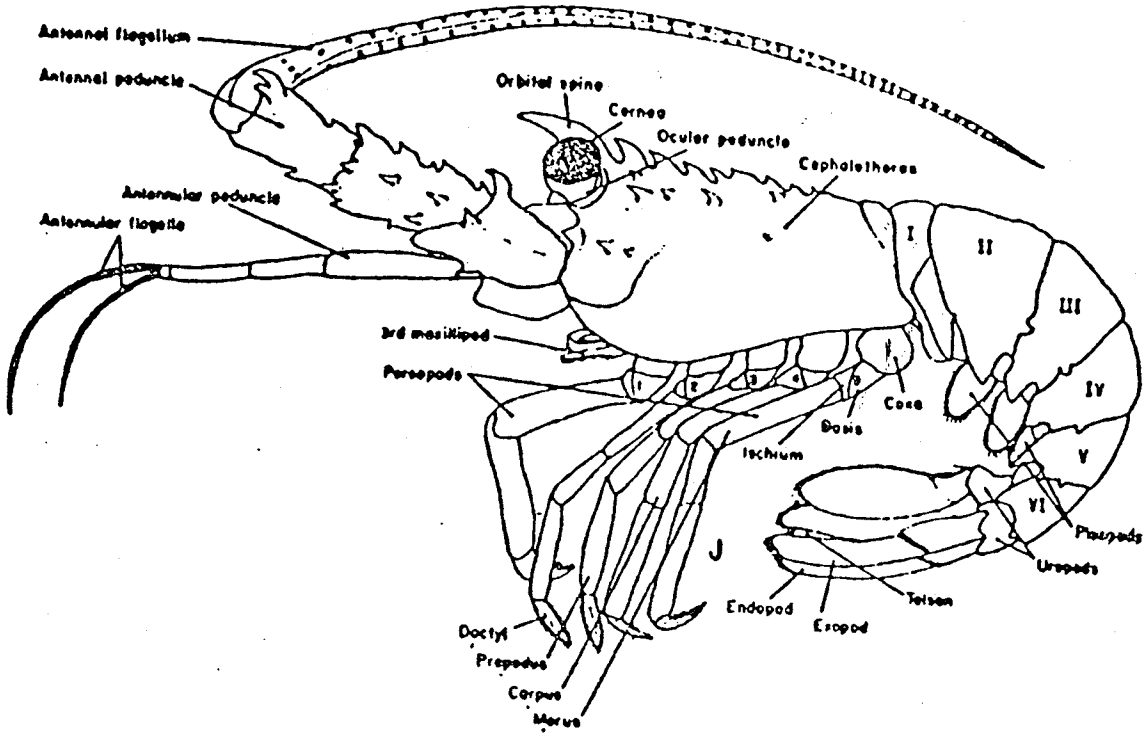


Figure 3.--*Scyllarides haanii*.



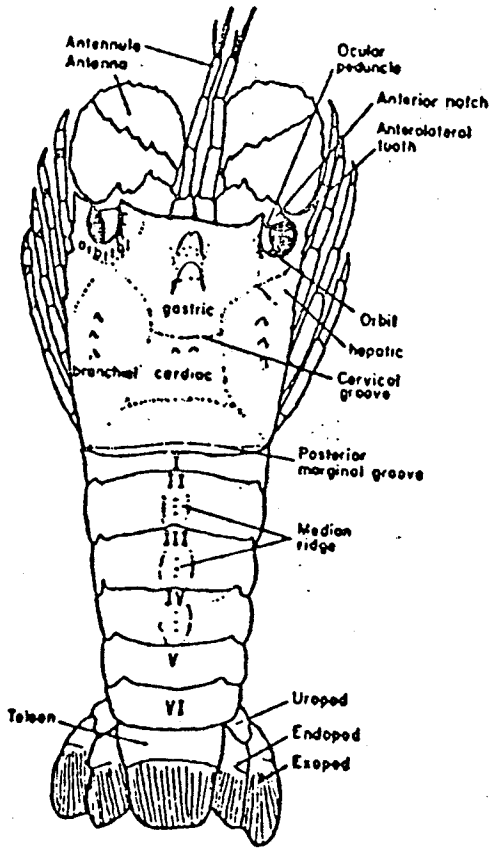


Figure 4.--Technical terms used in description of a lobster.

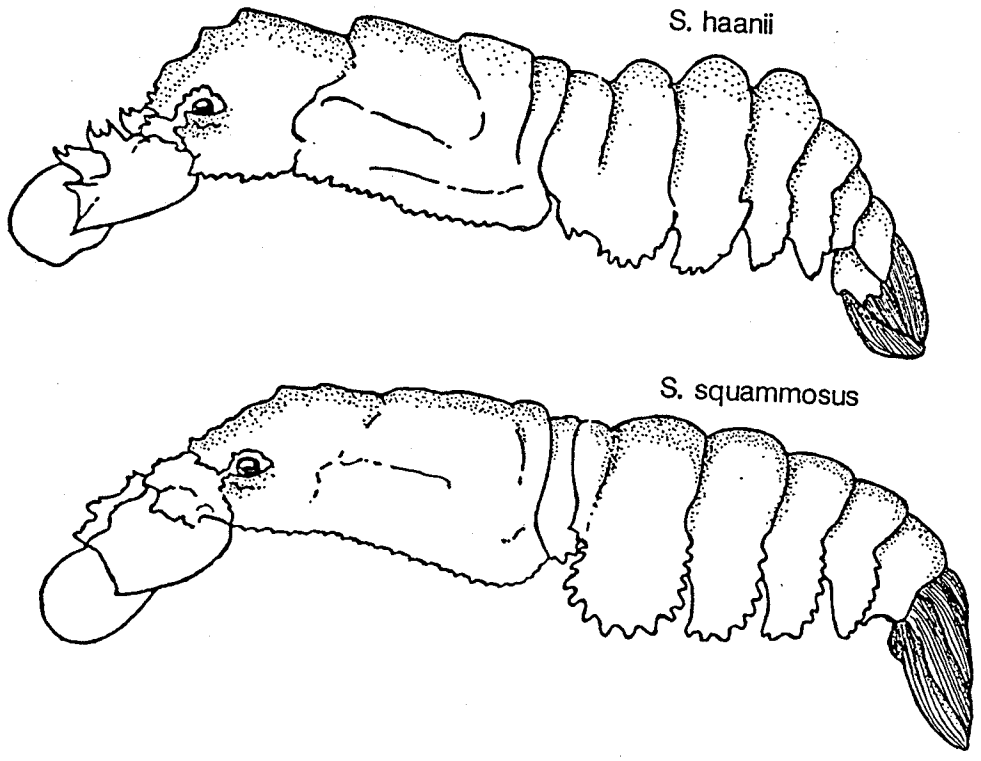


Figure 5.--Lateral view of Scyllarides haanii and S. squammosus.

3. Measurements

   a. Spiny lobster. A legal spiny lobster is defined as any spiny lobster with a tail width of 5.0 cm or larger.

      Carapace length (Fig. 6) is the distance along the middorsal line from the transverse ridge between the supraorbital spines to the posterior margin of the carapace.

      Tail width (Fig. 7) is the straight-line distance across the tail measured at the widest point between the first and second spines. This measurement is taken on the small posteriorly orientated projection at the posterior edge of the first tail segment.

   b. Slipper lobster. At this time there are no Federal regulations concerning a legal size for slipper lobster. However, some vessels may discard small slipper lobsters after determining their approximate size. Observers should be aware that there is a Hawaii State law which states that the minimum size for sale of slipper lobsters is 1 lb, unless the seller is licensed by the State to sell smaller ones.

      Carapace length (Fig. 8). Distance between the median anterior point of the carapace and the corresponding point of the posterior margin.

      Tail width (Fig. 9) is defined as the straight-line distance across the tail measured at the top of the notch between the first and second tail segments (Fishery Management Plan No. 4, May 27, 1986). This is a new measurement location.

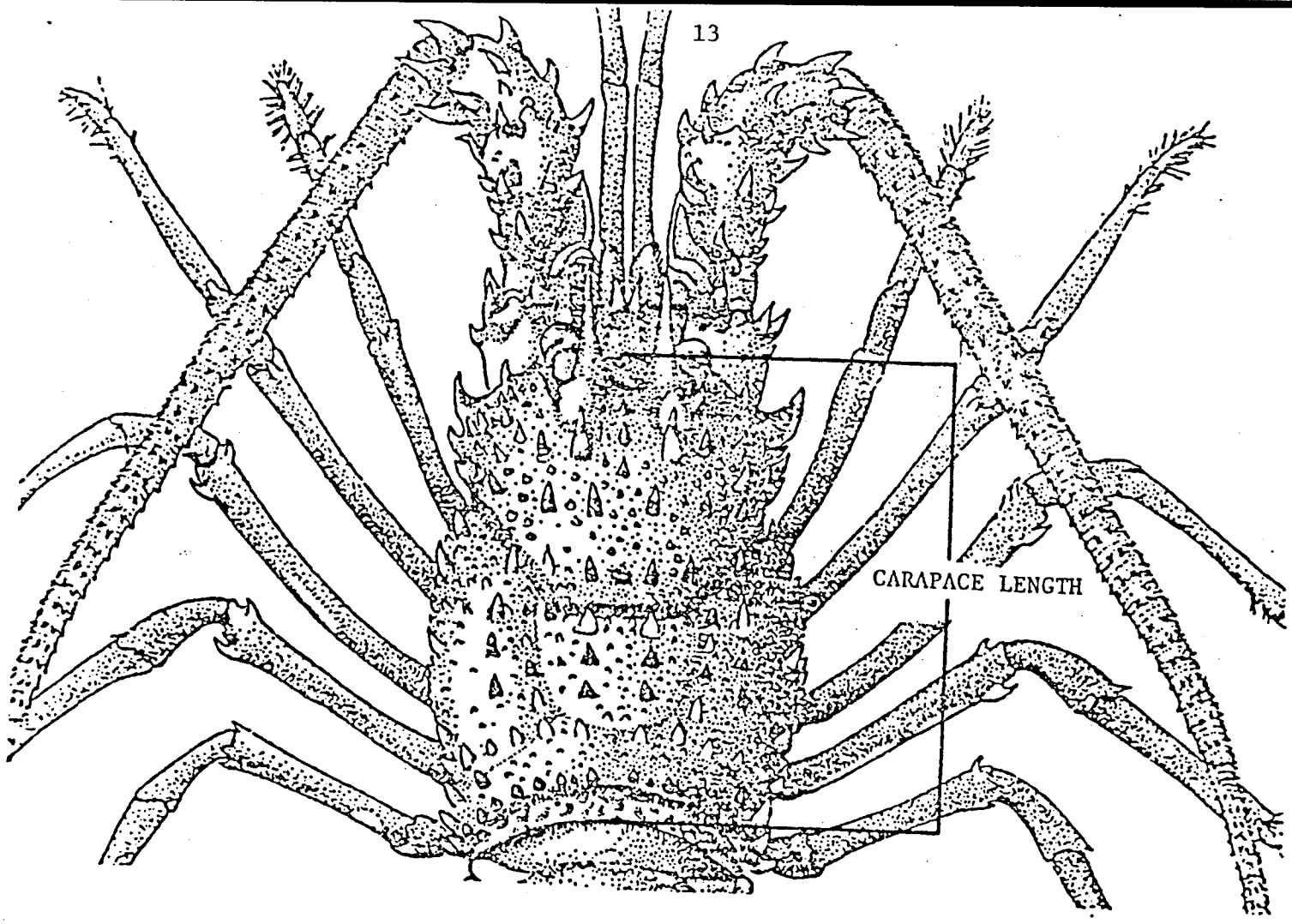
4. Sexual differences.

   a. Spiny lobster (P. marginatus, P. penicillatus).

      Female spiny lobster pleopods are much larger than males. Females often have a black patch (sperm plate) attached to the underside of the carapace. Males have a prominent nob on the fifth walking leg at the point of attachment to the carapace.

   b. Slipper lobster (S. squammosus, S. haanii).

      Female slipper lobster pleopods are much larger than males. Male slipper lobster pleopods are greatly reduced or missing.



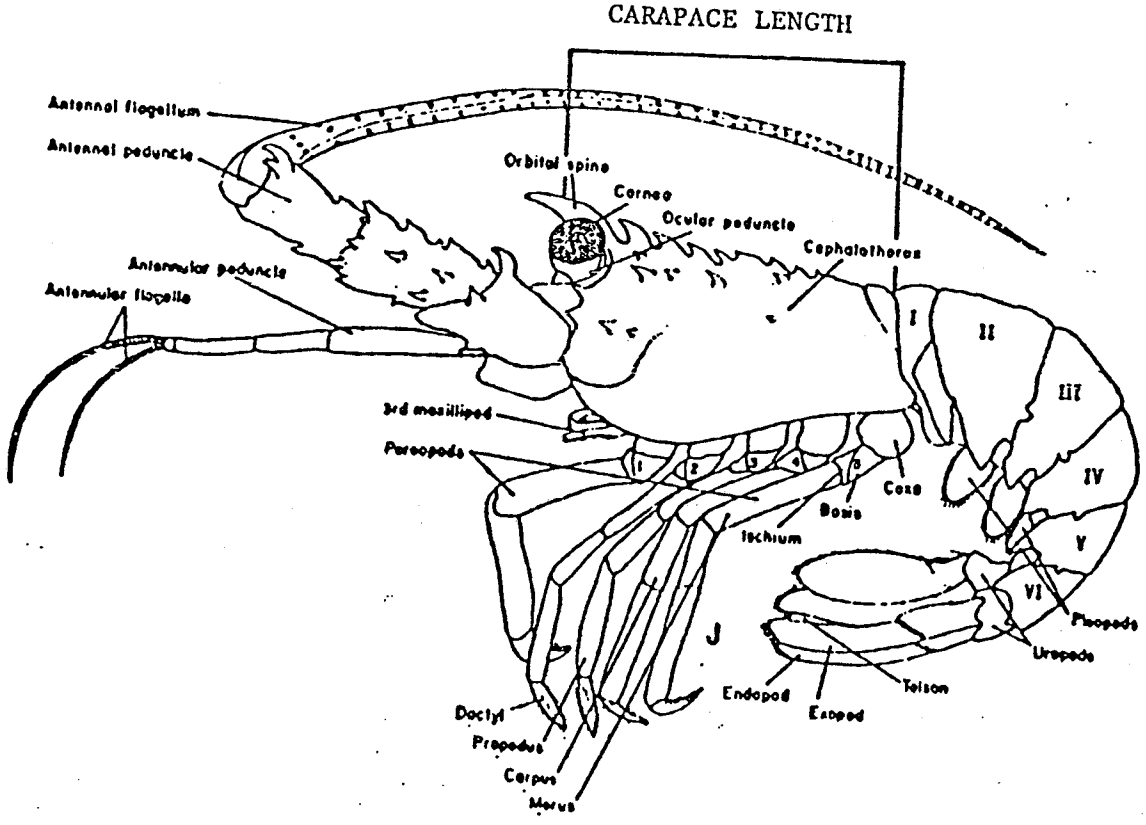
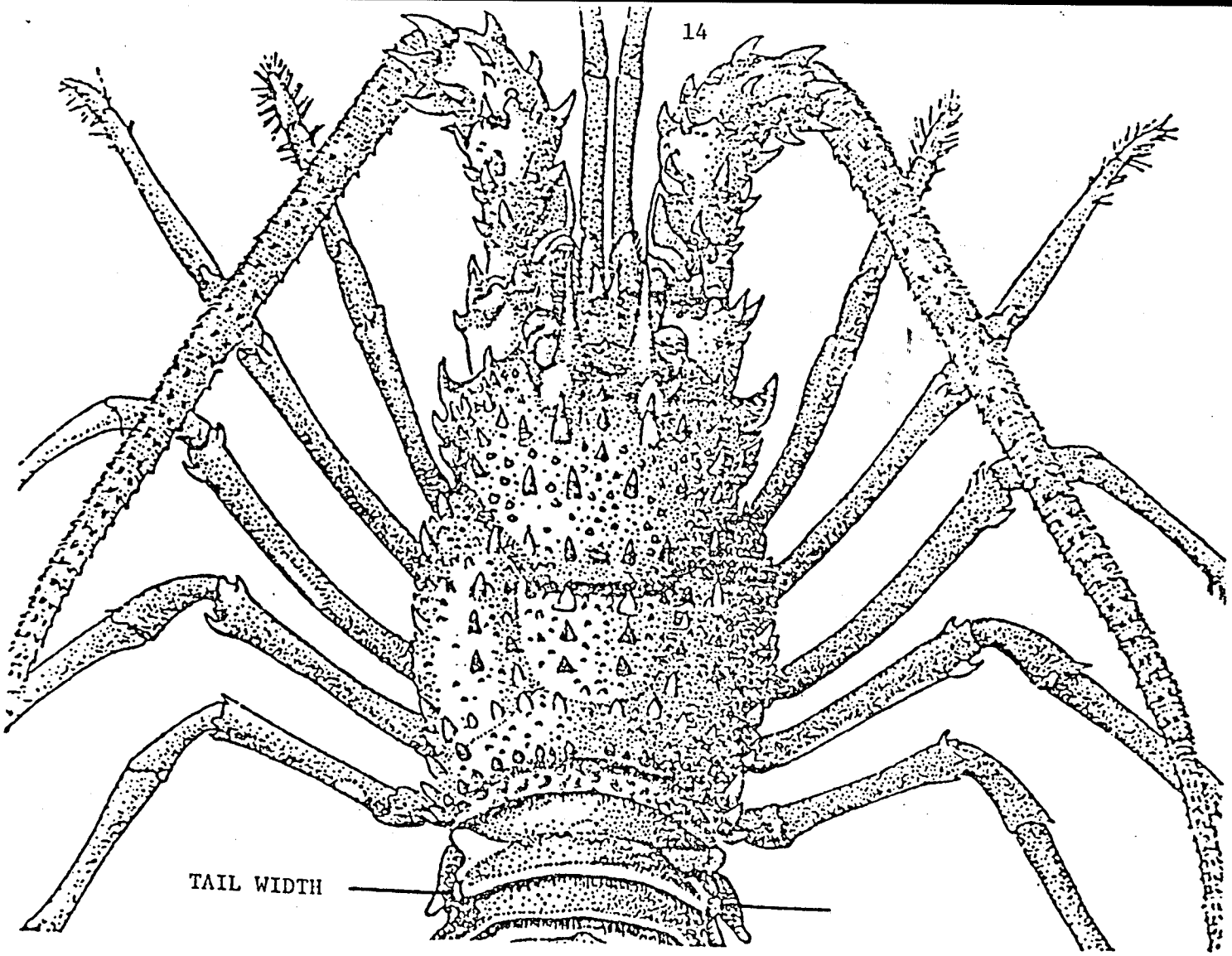


Figure 6.--Carapace length measurement for spiny lobster.



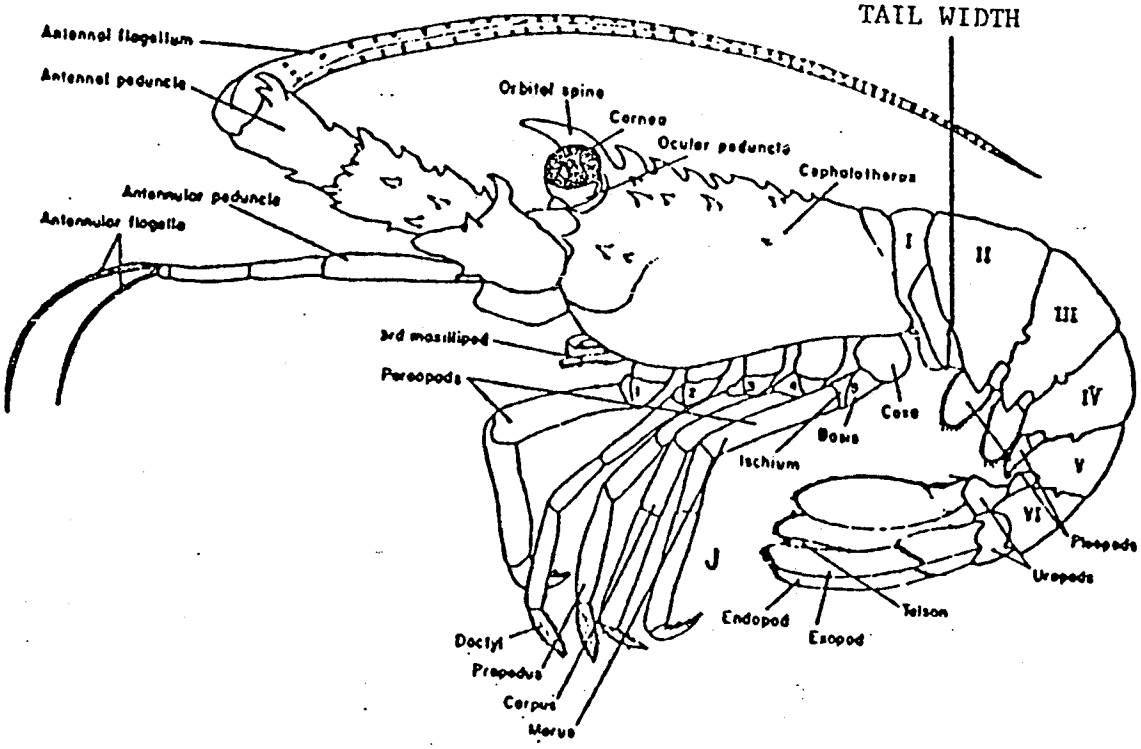


Figure 7.--Tail width measurement for spiny lobster.

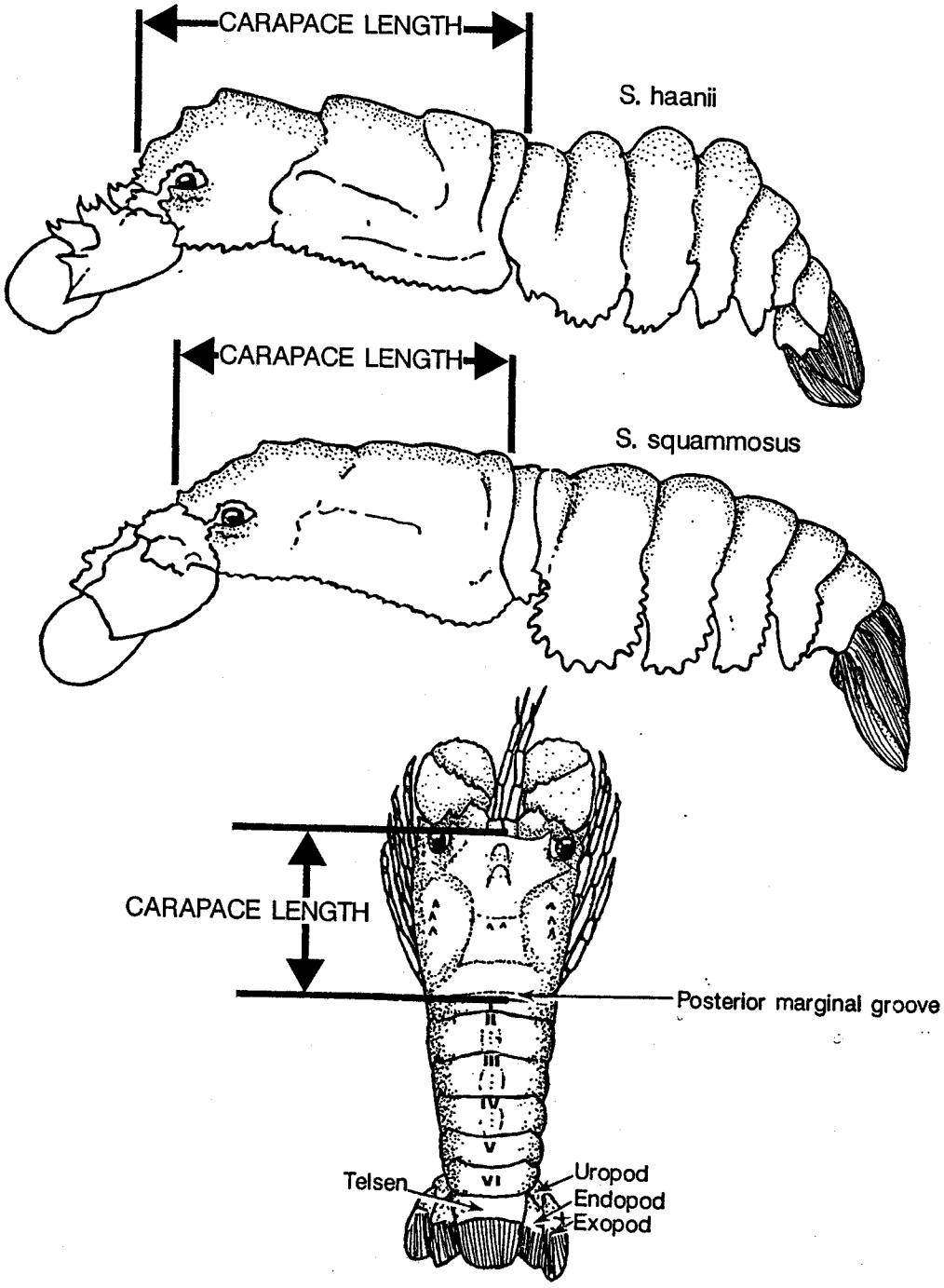


Figure 8.--Carapace length measurement for slipper lobster.

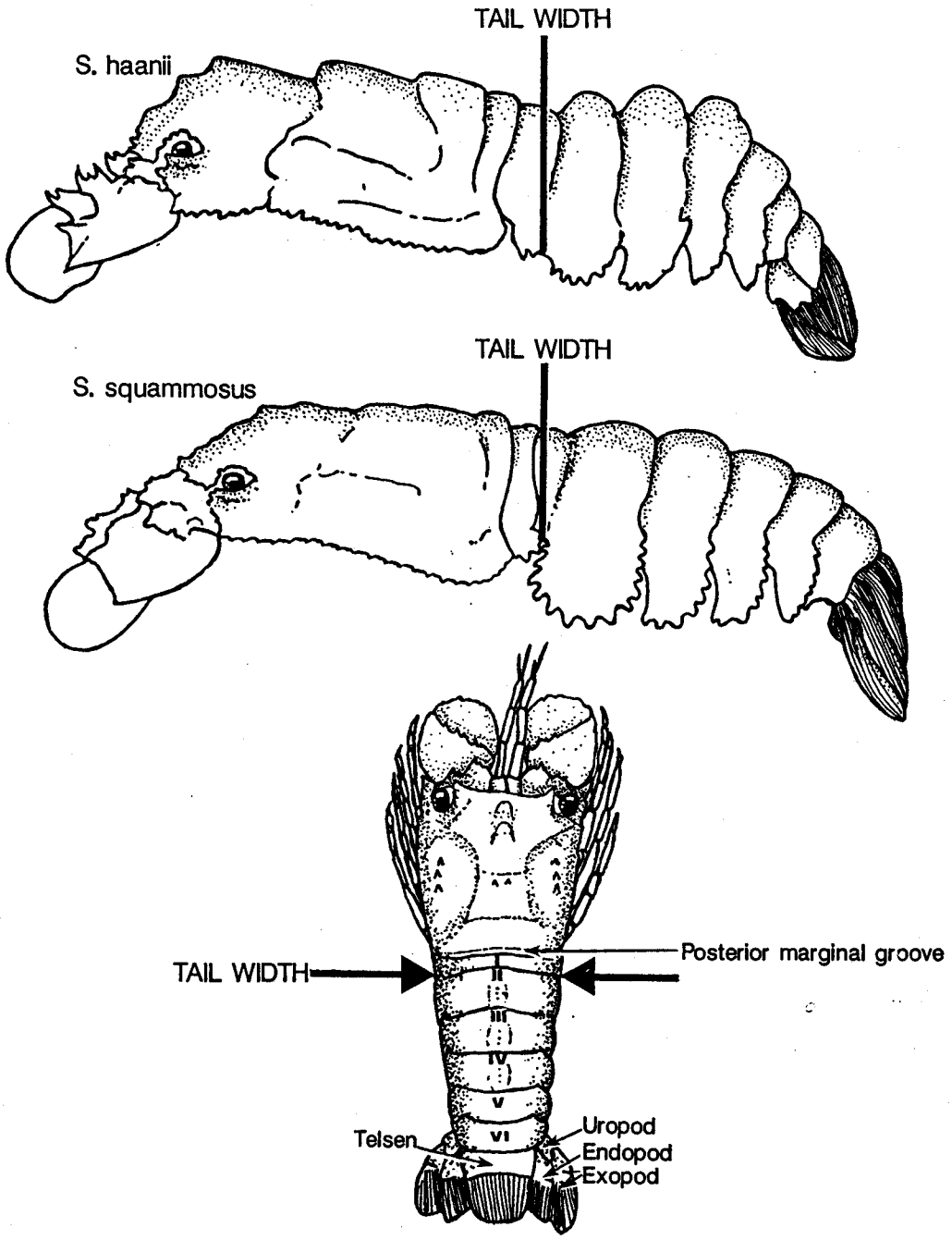


Figure 9.--Tail width measurement for slipper lobster.

5. State of maturation (applies to spiny and slipper lobsters).

   The physical appearance of the ovum (primary color) allows its classification into three development stages:

   Stage 1. Orange, freshly extruded; color retained for approximately 3 weeks (McGinnis 1972).

   Stage 2. Brown, late developmental stage; color retained for approximately 1 week (McGinnis 1972).

   Stage 3. White, hatching imminent; just before hatching, the eggs are almost colorless (Crawford and De Smidt 1922).

Data Collection and Sheets

A. Lobster counts (used for spiny and slipper lobsters) (Fig. 10).

   1. Vessel information.

      a. Vessel name.

      b. Date sampled: Month, day, year.

      c. Trip number (will be entered after returning).

      d. Area (Hawaii Division of Aquatic Resources (HDAR) statistical area or longitude and latitude to nearest minute or loran reading).

      e. Number of traps hauled for a given day.

      f. Depth range fished: Units fished (e.g., fathoms, meters, etc).

      g. String number: First set of traps retrieved will be string number 1 followed consecutively by any other strings. The number of traps on the string should be recorded here also (e.g., for string 3 having 50 traps, 3-50 should be entered).

      h. Recorder's name or initial.

2. Lobster information.

a. Species (spiny lobster).

1. Number of legal lobsters.

2. Number of sublegal lobsters.

3. Number of berried lobster.

4. Total number of spiny lobsters in a given trap.

b. Slipper lobster (these columns have been separated into S) (S. squammosus) and H (S. haanii). Some vessels may separate the slipper lobsters by species, if so, appropriate column is to be used. If not, cross out the H and put totals in the column marked S.

1. Number of legal lobsters (there is presently no Federal regulation on slipper lobster size).

2. Number of undersized (some boats are releasing small animals).

3. Number berried.

B. Morphometric data. Spiny lobster (P. marginatus and P. penicillatus).

1. Vessel information.

a. Vessel name.

b. Date sampled.

c. Trip number (will be entered after returning).

d. Area (HDAR statistical area or longitude and latitude to nearest minute or loran reading).

e. Recorder's name.

f. String number.

g. Depth range fished: Units fished (e.g., fathoms, meters, etc).

h. Number of traps hauled on a given day.

2. Lobster information.

   a. Species.

   b. Carapace length.

   c. Tail width.

   d. Sex, if berried, color of eggs.

3. Sampling should not start with first trap or end with last trap. Every lobster in the trap should be measured. The number of traps sampled will depend on the speed of the observer.

C. Morphometric data--slipper lobster (S. squammosus and S. haanii) (Fig. 11).

1. Vessel information.

   a. Same as above.

2. Lobster information.

   a. Species.

   b. Carapace length.

   c. Tail width.

   d. Sex, if berried, color of eggs.

3. Sampling should not start with first or end with last trap. All slipper lobster in the trap should be sampled. The number of traps sampled will depend on the speed of the observer.

Data Sheets

A. Lobster counts (Fig. 10).

1. Vessel information same as above.

2. Line 1 represents trap number 1, if there are five legal, two sublegal, and one berried spiny lobster in trap number 1, the data should be entered as in Figure 10. If slipper lobsters are also included in catch of trap number 1, they should be noted in the appropriate column. The S represents S. squammosus and H represents S. haanii. If no distinction is made between species, the H should be crossed out and the S column used. The

Figure 10

NO.___OF___

FMP MONITORING
LOBSTER COUNTS

VESSEL Mililani DATE 5/4/85 TRIP NO. 4

AREA 1139 (if Lat. and Long. available enter here) NO. HAULED 600 DEPTH 35-40 fm.

STRING NO. 3-50 RECORDER VH

	SPINY				SLIPPER							
					S	H	S	H	S	H	S	H
	LEGAL	SUBLEGAL	BERRIED	TOTAL	LEGAL		SUBLEGAL		BERRIED		TOTAL	
1	5	2	1	8	2	1	1			1	3	2
2												
3												
4												
5												
6												
7												
8												
9												
0												
1												
2												
3												
4												
5												
6												
7												
8												
9												
0												

sublegal column is for any slipper lobster discarded by vessel as being too small. If slipper lobsters are being discarded, note their size (CL, TW, and approximate weight and what is considered too small).

B. Lobster morphometrics (Fig. 11).

1. Vessel information same as above.

2. Species: Lobsters will be recorded as follows:

PM = P. marginatus
PP = P. penicillatus
SS = S. squammosus
SH = S. haanii

3. Carapace length: Measured and recorded in tenths of a centimeter (e.g., 7.9 cm).

4. Tail width: Measured and recorded in tenths of a centimeter (e.g., 5.2 cm).

5. Sex: Sex will be recorded as follows:

M = male
F = female
FO = female, orange
FB = female, brown
FW = female, white

6. Number of lobsters per trap (Fig. 11). When the first lobster is sampled from a trap, the corresponding sequence number should be circled. For five traps sampled, there should be five sequence numbers circled, e.g., first trap hauled, No. 1 should be circled indicating that this is the first trap in the string. If three lobsters are caught, appropriate columns should be filled in. When the second trap is hauled, No. 4 should be circled to indicate that this is the second trap.

Overtime

A. Title 5 U.S. Code:

1. Title 5 specifies that all employees will be paid overtime for all work that is officially ordered or approved and exceeds 40 hours in a week or 8 hours in a day. The key to entitlement is that the excess work is **officially ordered** and **approved.** This means that a management official, who has been delegated the authority to approve

Figure 11

NO.___OF___

FMP MONITORING
LOBSTER MORPHOMETRICS

VESSEL Mililani DATE 5/4/85 TRIP NO. 4

AREA 1139 (If Lat. and Long. available enter here) RECORDER VH

STRING NO. 3-50 DEPTH 35-40 fm NO. HAULED 600

	SPECIES	(CM) CL	(CM) TW2	SEX		SPECIES	(CM) CL	(CM) TW2	SEX
①	SS	7.9	5.1	M	1				
2	SS	7.5	5.3	F	2				
3	SH	8.2	5.6	FO	3				
④	PM	7.6	5.1	FW	4				
5	PM	7.9	5.2	FB	5				
6	PP	8.1	5.3	F	6				
⑦	SH	3.2	1.0	F	7				
8					8				
9					9				
0					0				
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
9					9				
0					0				

overtime, approves it in writing and in advance on CD Form 81.

2. The law requires that overtime (work in excess of 8 hours in a day or 40 hours in a week) that is officially ordered and approved on a CD-81 must be compensated. For employees at or below step one of GS-10, the rate is 1-1/2 times the hourly rate.

3. The law also allows compensatory time, at the request of the employee, for irregular overtime work. However, the Department of Commerce policy requires that employees whose pay exceeds GS-10, step 10, must take compensatory time for irregular overtime, unless the next higher level of supervision approves payment for the hours. Employees whose pay rate is GS-10, step 10 or below must be paid unless they request compensatory time.

B. Fair Labor Standards Act (FLSA):

1. The FLSA provisions, including definitions of hours worked, apply only to "nonexempt" employees. The exempt/nonexempt designation is found on the official position description (Block 6 on the OF-8).

2. The FLSA is protective legislation designed to protect the employee's entitlement to overtime. Thus the definition of hours worked is much broader. In addition to the time the employee is normally required to be on duty, hours worked include the time which an employee is "suffered or permitted" to work. "Suffered or permitted" generally means performed work for the benefit of the employer. The work does not have to be scheduled in advance; management suffers or permits an employee to work when it knowingly allows an employee to work. Thus if management, with knowledge, allows an employee to work beyond the scheduled hours, the extra time becomes hours worked. Hours worked can also include, under certain circumstances, travel time.

For more detailed information refer to NOAA memorandum dated May 7, 1986 on overtime entitlement.

LITERATURE CITED

Crawford, D. R., and W. J. J. De Smidt.
1922. The spiny lobster, Panulirus argus, of southern Florida: Its natural history and utilization. Bull. Bur. Fish. 38:281-310.

McGinnis, F.
1972. Management investigation of two species of spiny lobsters, Panulirus japonicus and P. penicillatus. Division of Fish and Game Report, Department of Land and Natural Resources, Honolulu, Hawaii, 47 p.

Morin, T. D., and C. D. MacDonald.
1984. Occurrence of the slipper lobster Scyllarides haanii in the Hawaiian Archipelago. Proc. Biol. Soc. Wash. 97:404-407.

Tinker, S. R.
1965. Pacific crustacea. Charles E. Tuttle Co., Rutland, Vermont, and Tokyo, 134 p.